FIGURE SIXTY-THREE
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO JAPAN
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)

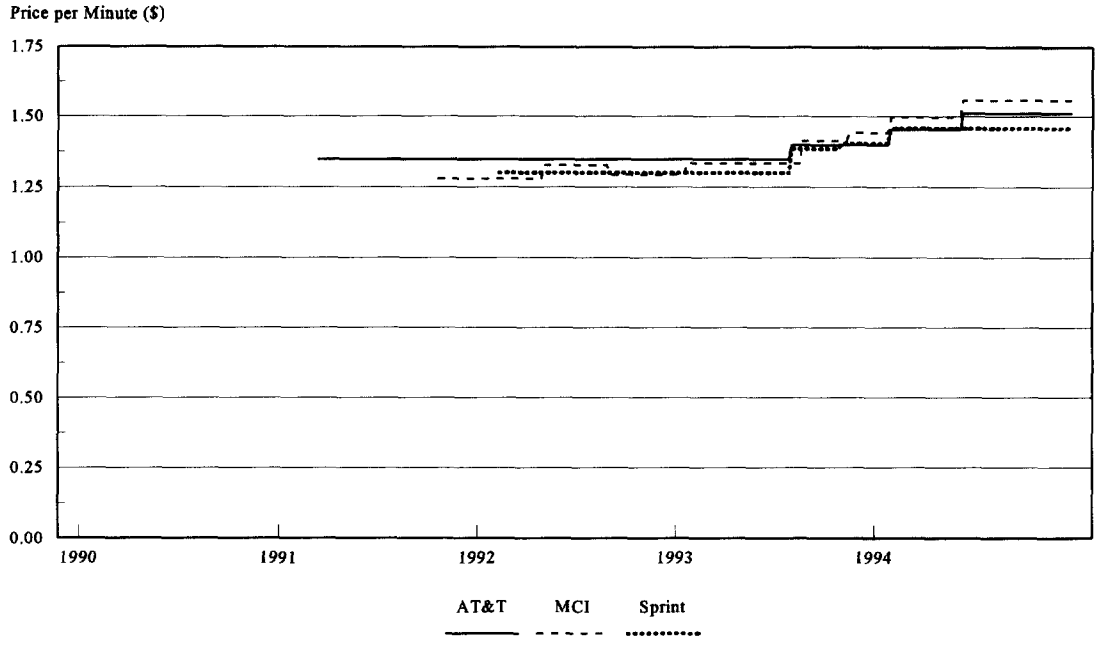


FIGURE SIXTY-FOUR
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO DOMINICAN REPUBLIC
(95% STANDARD, 5% DISCOUNT, AND 0% ECONOMY)

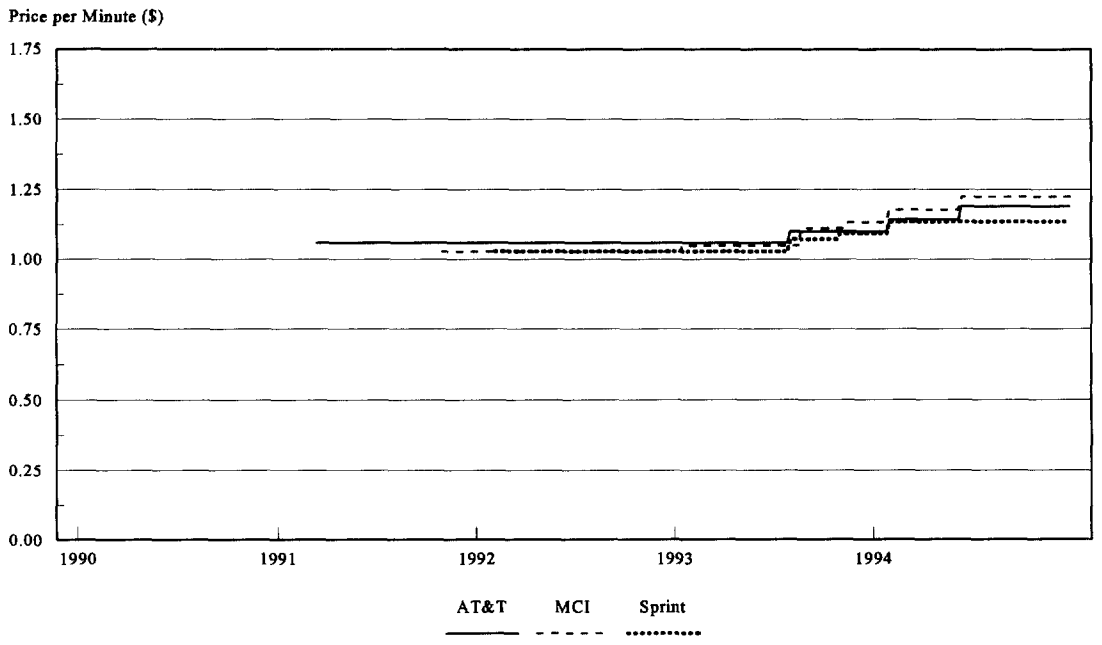


FIGURE SIXTY-FIVE
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO CANADA
MONTHLY USAGE EQUALS 100 MINUTES
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)

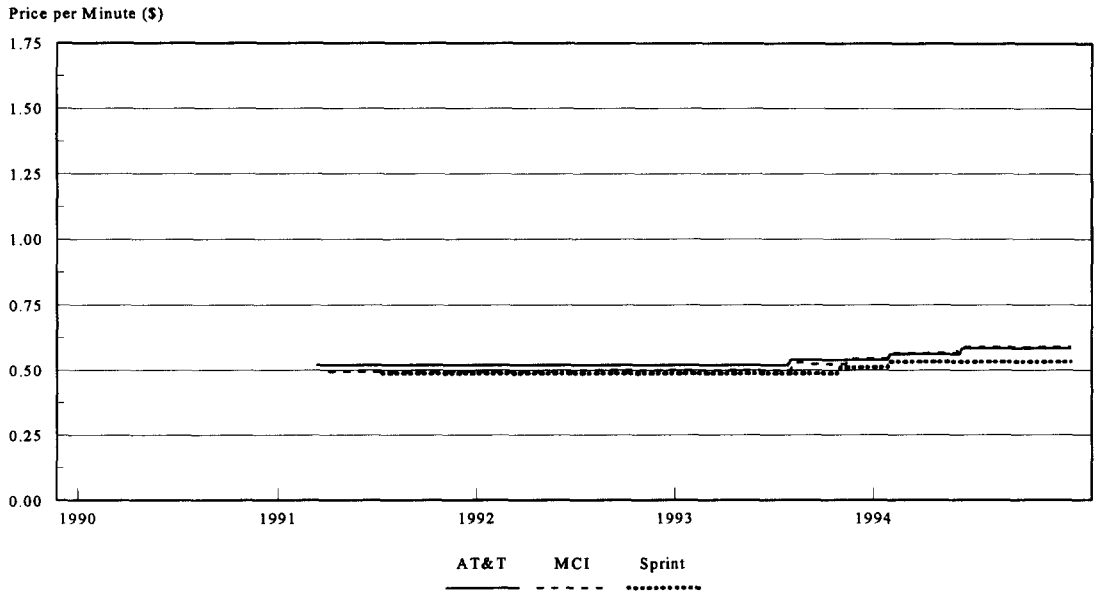


FIGURE SIXTY-SIX
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO MEXICO
MONTHLY USAGE EQUALS 100 MINUTES
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)

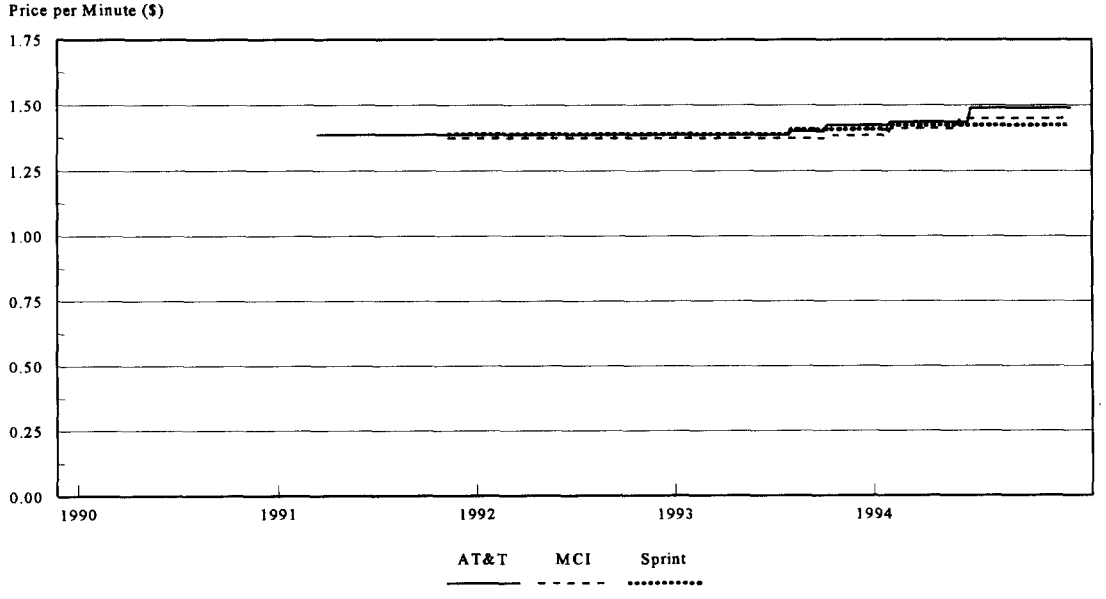


FIGURE SIXTY-SEVEN
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO UNITED KINGDOM
MONTHLY USAGE EQUALS 100 MINUTES
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)

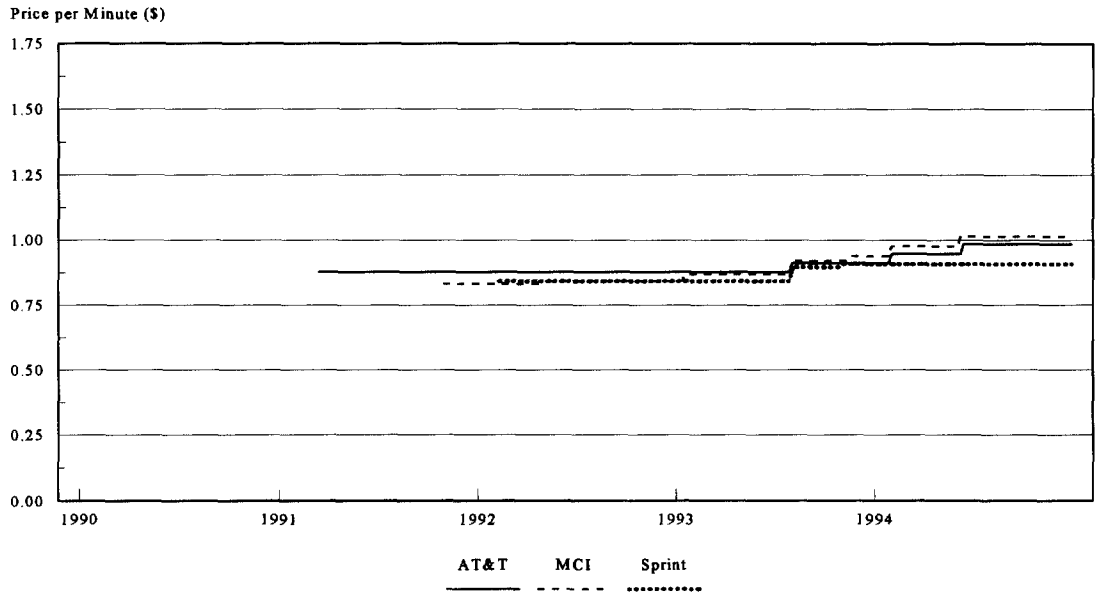


FIGURE SIXTY-EIGHT
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO GERMANY
MONTHLY USAGE EQUALS 100 MINUTES
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)

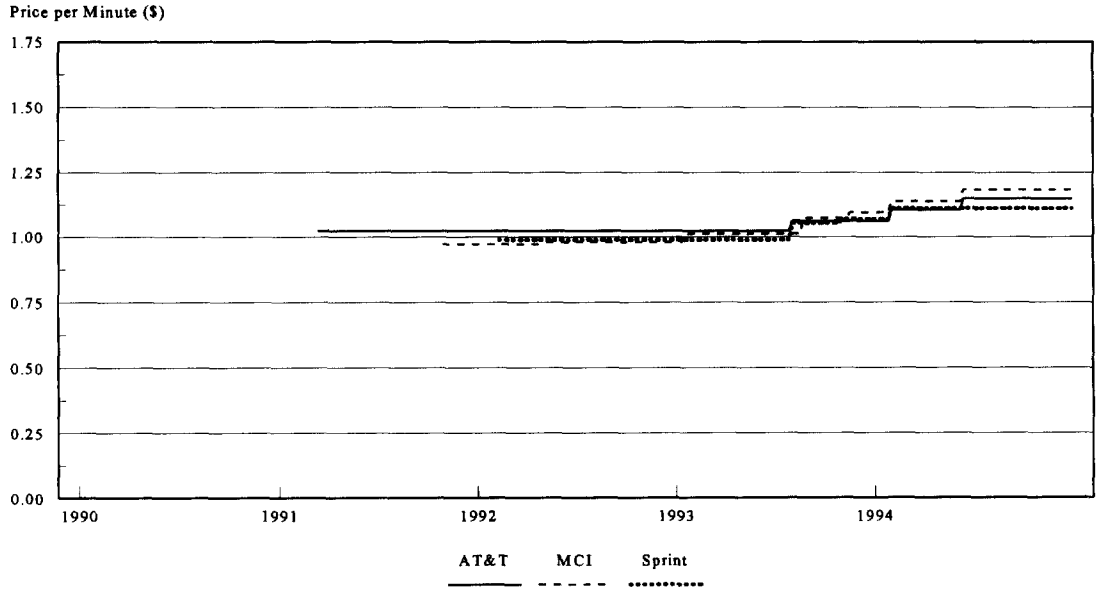


FIGURE SIXTY-NINE
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO FRANCE
MONTHLY USAGE EQUALS 100 MINUTES
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)

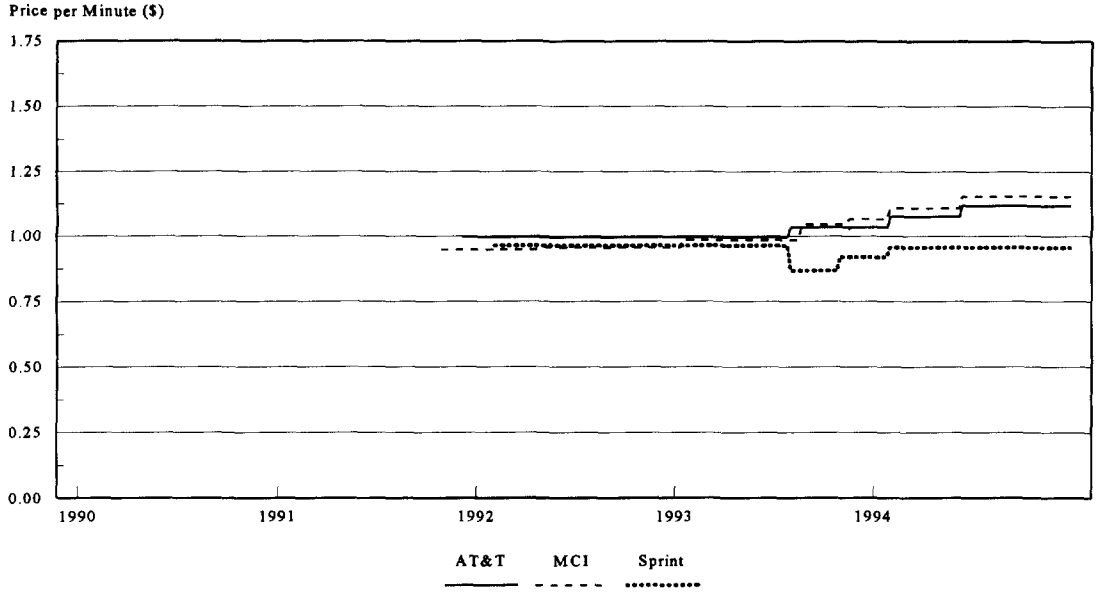


FIGURE SEVENTY
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO ITALY
MONTHLY USAGE EQUALS 100 MINUTES
(60% STANDARD, 20% DISCOUNT, AND 20% ECONOMY)

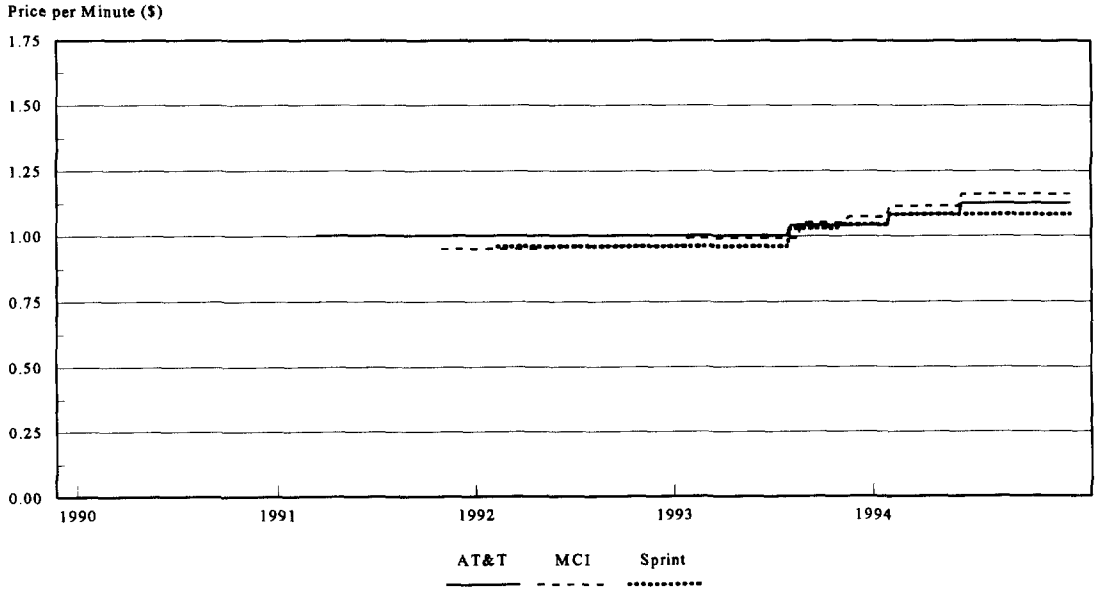


FIGURE SEVENTY-ONE
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO JAPAN
MONTHLY USAGE EQUALS 100 MINUTES
(75% STANDARD, 25% DISCOUNT, AND 0% ECONOMY)

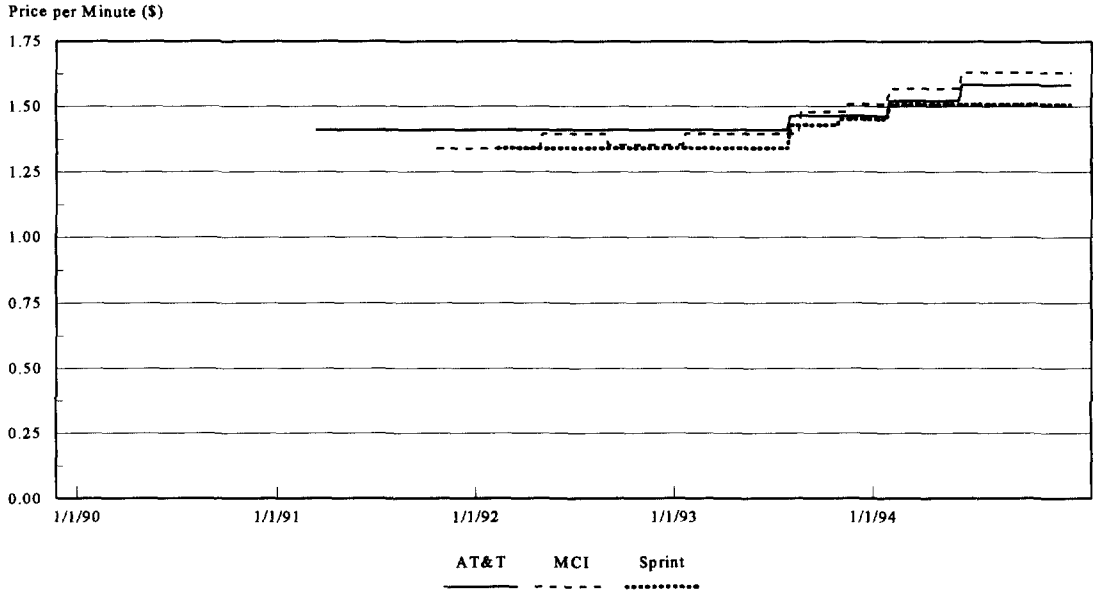
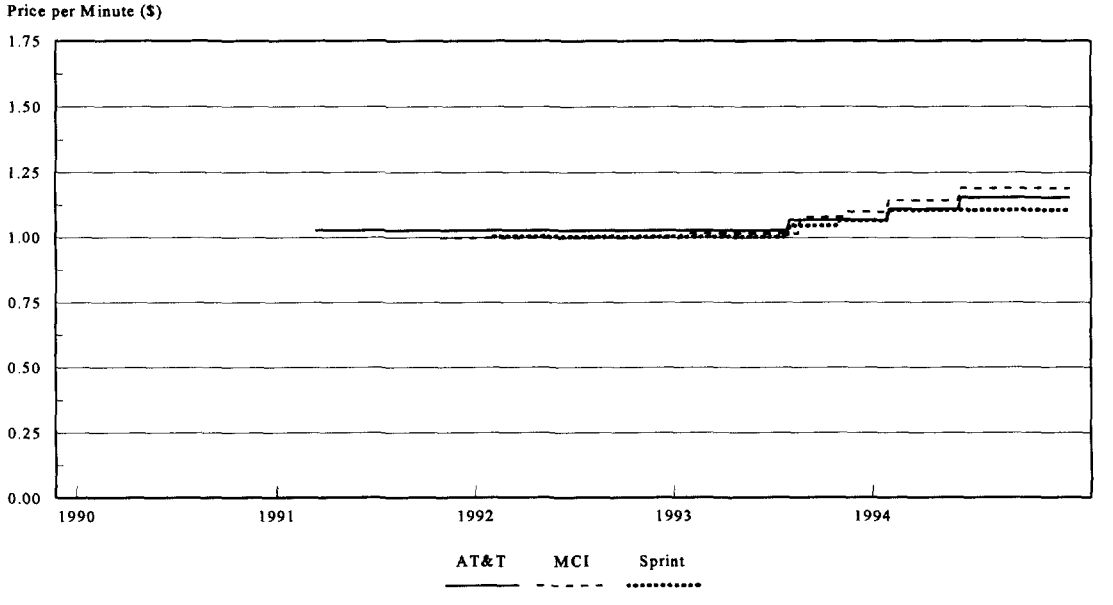


FIGURE SEVENTY-TWO
IWATS INDEX PRICES FOR
LONG-DISTANCE CALLS FROM U.S. TO DOMINICAN REPUBLIC
MONTHLY USAGE EQUALS 100 MINUTES
(85% STANDARD, 10% DISCOUNT, AND 5% ECONOMY)



APPENDIX FIVE

CALCULATION OF MARGINAL COSTS

Carriers' marginal costs were calculated based on information regarding switched access costs incurred in the United States, network costs, and net settlement payments. This last term takes into account inbound calls by considering the difference between payouts by United States carriers and receipts from foreign carriers according to established accounting rates. An example of the marginal cost calculation for AT&T's IMTS service from the United States to the United Kingdom in 1990 can be illustrated as follows. The net settlement payment per minute is based on the following information obtained from the FCC's *Section 43.61 International Telecommunications Data Report.*

TABLE ONE
AT&T NET SETTLEMENT PAYMENT TO UNITED KINGDOM CARRIERS
(1990)

Payout by AT&T	$208,717,652
- Receipt from United Kingdom Carriers	$146,216,690
Net Settlement Payment from AT&T to United Kingdom Carriers	$62,500,962

The total number of minutes of traffic billed in the United States in 1990 on AT&T's lines between the United States and the United Kingdom was 438,842,457, so the net settlement payment per minute per outbound minute equals $0.1424. Combining the information on the net settlement payment per minute with data on access costs and network expenses yields the following estimate of marginal costs.

TABLE TWO
AT&T MARGINAL COSTS FOR IMTS CALLS
(UNITED STATES TO UNITED KINGDOM IN 1990)

Switched Access Charge in the United States Source: FCC (19, MONITORING REPORT, Table 5.11	0.0375
+ Network Cost from United States Carrier's "Point of Presence" to its United States "Gateway" (the point where the call exits the United States) Source: Wharton Econometric Forecasting Associates, (1993) ECONOMIC IMPACT OF ELIMINATING THE LINE-OF-BUSINESS RESTRICTIONS ON THE BELL COMPANIES, pp. 20-21.	0.0100
+ Network Cost from United States Gateway to Foreign Gateway Source: Based on WEFA cost estimates for domestic calls.	0.0100
+ Net Settlement Payment divided by Outbound Minutes Source: FCC, SECTION 43.61 INTERNATIONAL TELECOMMUNICATIONS DATA REPORT	0.1424
Marginal Cost per Minute	0.1999

Switched access costs were obtained from the FCC's MONITORING REPORT and show the national average for "premium" access service. The total charges per conversation minute are 107 percent of the originating carrier common line rate plus 107 percent of the traffic sensitive rate. The scaling factor accounts for the fact that originating minutes exceed terminating minutes by seven percent.

With respect to marginal network costs for transporting an international call from a domestic carrier's point of presence ("POP") to an international gateway, Wharton Econometric

Forecasting Associates ("WEFA") reports that domestic network costs equal $0.01 per minute, which is consistent with AT&T's cost estimates for WATS services.[1] According to an AT&T cost expert testified, its network costs for switched and dedicated IWATS services (both inbound and outbound) ranged from $0.0101 to $0.0130 per minute (see Table Three).[2]

TABLE THREE
AT&T ESTIMATES OF LONG-RUN
NETWORK COSTS FOR LONG-DISTANCE CALLS
(DOLLARS PER MINUTE)

IWATS Outbound Switched	IWATS Outbound Dedicated	IWATS Inbound Switched	IWATS Inbound Dedicated
Pro WATS	Megacom WATS	Ready Line 800	Megacom 800
$0.0101	$0.0130	$0.0108	$0.0129

Source: *Direct Testimony of John Sumpter on Behalf of AT&T Communications of California, Inc.*, June 18, 1990, *Application of AT&T Communications of California, Inc. (U 5002 C) for Authority to Provide Intrastate AT&T 800 READYLINE Service.*

With respect to network costs for transporting a call from a domestic gateway to a foreign gateway, there are no publicly available sources that report this incremental cost. However, domestic network costs reported by WEFA and AT&T are valid for transmission over distances similar to the distance associated with overseas traffic. Since the incremental cost of long-distance transmission tends to be distance insensitive, estimates of incremental cost for domestic long distance traffic should be a reasonable proxy for the incremental cost of international long distance traffic.

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[1] WEFA, ECONOMIC IMPACT OF ELIMINATING THE LINE-OF-BUSINESS RESTRICTIONS ON THE BELL COMPANIES, pp. 20-21 (July 1993) (citing Bellcore data).

[2] *Direct Testimony of John Sumpter on Behalf of AT&T Communications of California, Inc.*, June 18, 1990, *Application of AT&T Communications of California, Inc. (U 5002 C) for Authority to Provide Intrastate AT&T 800 READYLINE Service.*

In fact, estimates of the incremental network costs for domestic long-distance traffic are likely an upper bound on the incremental network costs of international long-distance transmission. When undersea transmission facilities are installed, they typically have a significantly higher ratio of installed capacity to current traffic load. In other words, more spare capacity is installed due to facility-cost considerations that favor less frequent additions to transmission facility capacity. As a result, transmission facilities are expected to serve traffic growth for a longer period of time than is typical for domestic, land-based transmission facilities. Consequently, the incremental network cost of an international long-distance call from a domestic gateway to a foreign gateway is reasonably approximately by the incremental network cost of a domestic long-distance call.

FIGURE ONE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO CANADA
(BASED ON NET SETTLEMENT PAYMENTS)

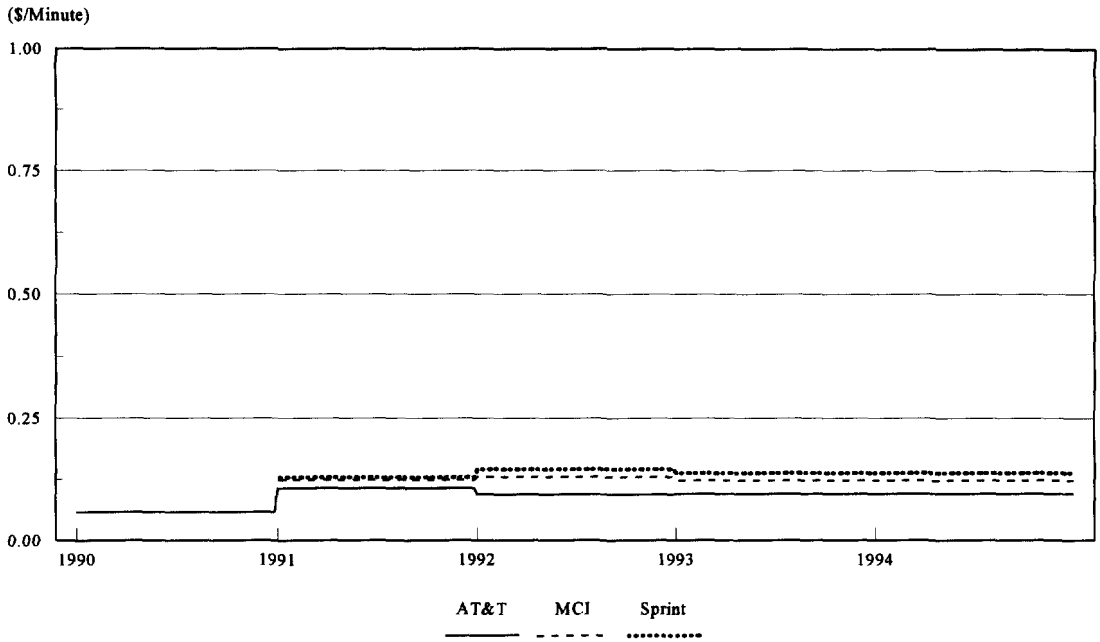

FIGURE TWO
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO MEXICO
(BASED ON NET SETTLEMENT PAYMENTS)

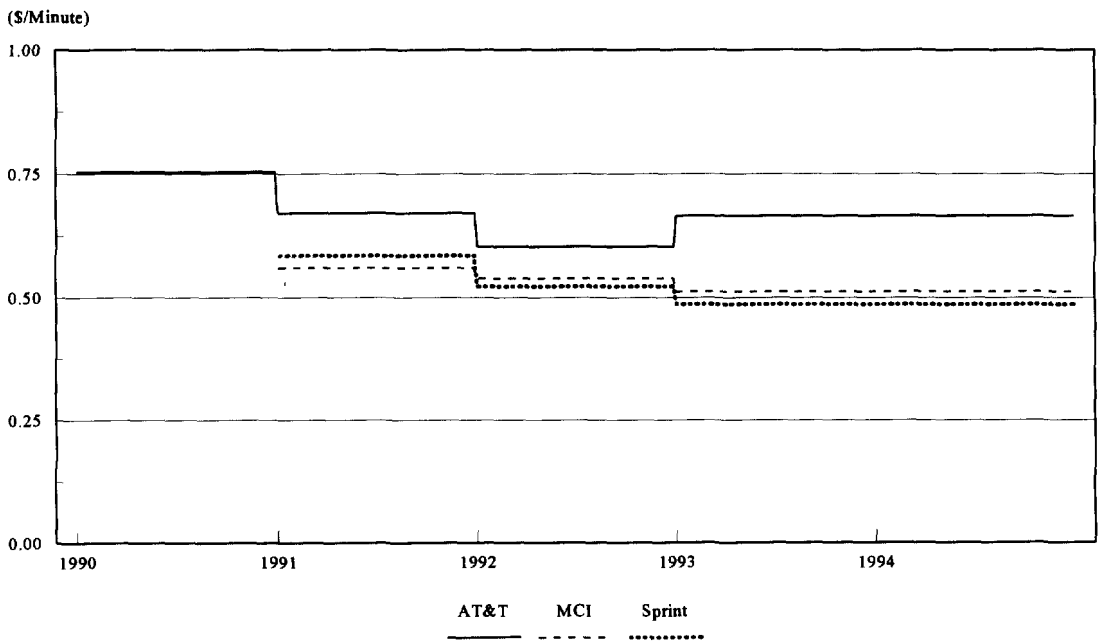

FIGURE THREE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO UNITED KINGDOM
(BASED ON NET SETTLEMENT PAYMENTS)

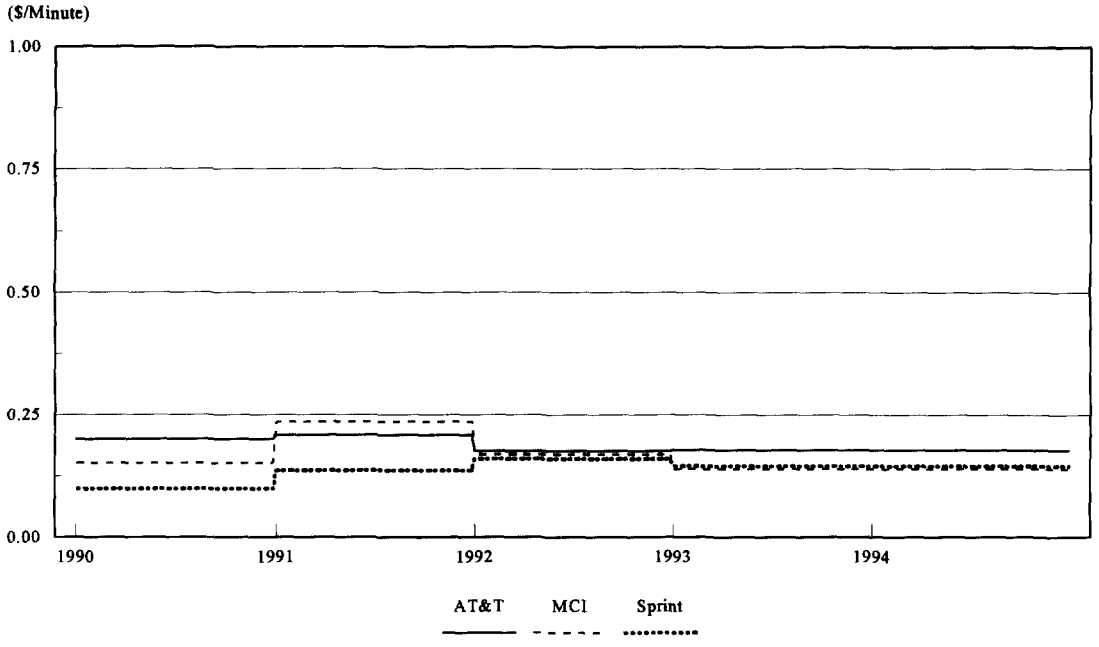

FIGURE FOUR
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO GERMANY
(BASED ON NET SETTLEMENT PAYMENTS)

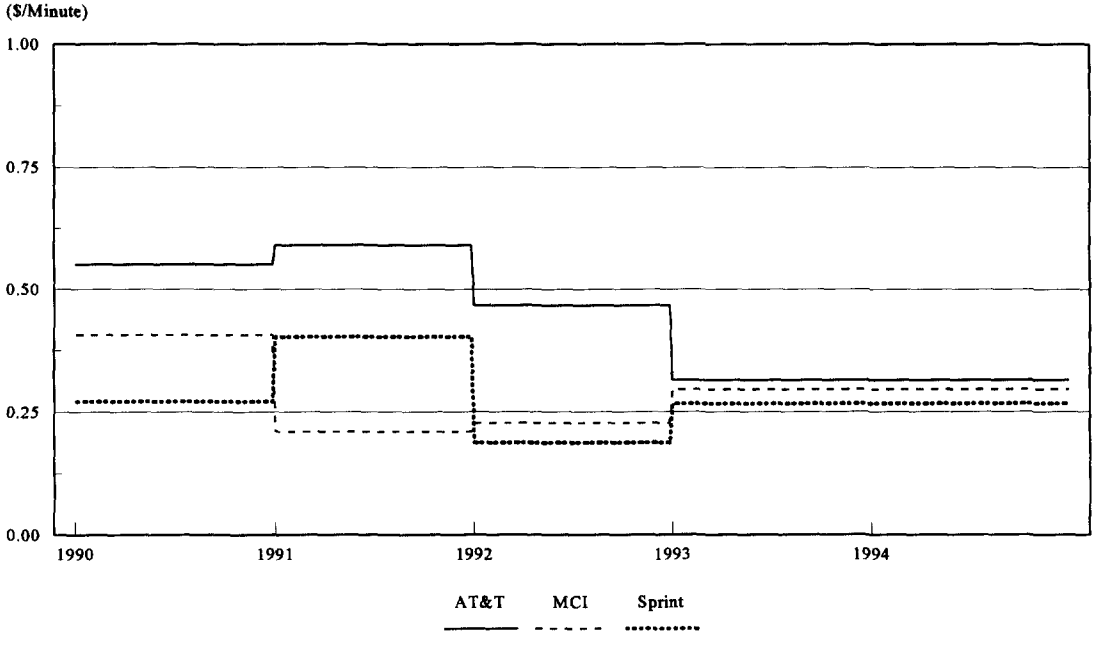

FIGURE FIVE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO FRANCE
(BASED ON NET SETTLEMENT PAYMENTS)

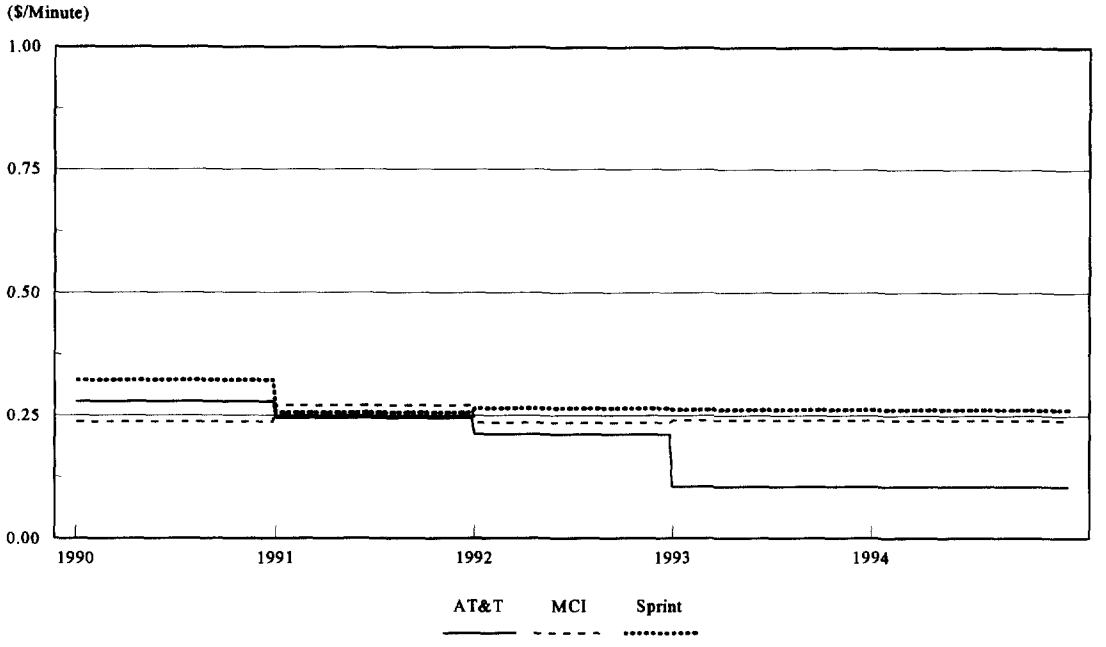

FIGURE SIX
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO ITALY
(BASED ON NET SETTLEMENT PAYMENTS)

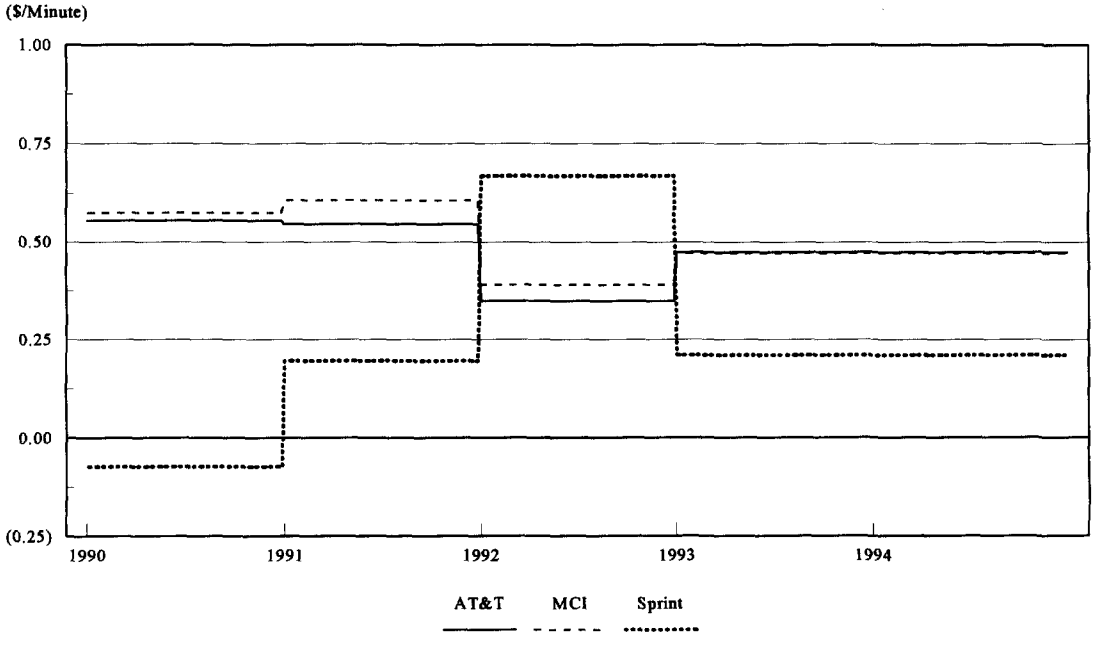

FIGURE SEVEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO JAPAN
(BASED ON NET SETTLEMENT PAYMENTS)

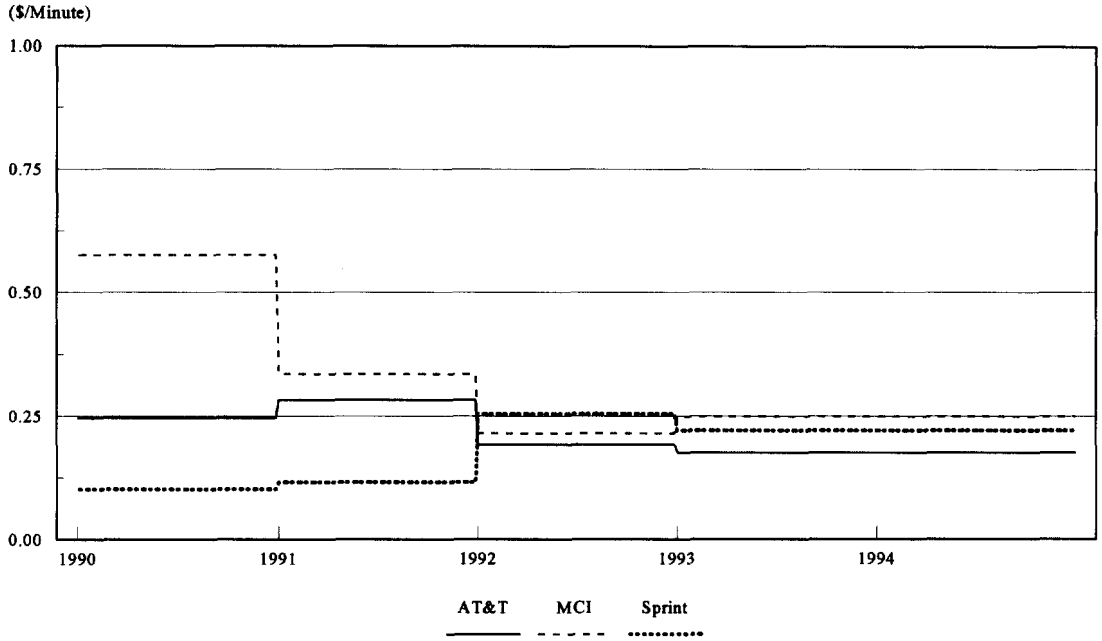

FIGURE EIGHT
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO DOMINICAN REPUBLIC
(BASED ON NET SETTLEMENT PAYMENTS)

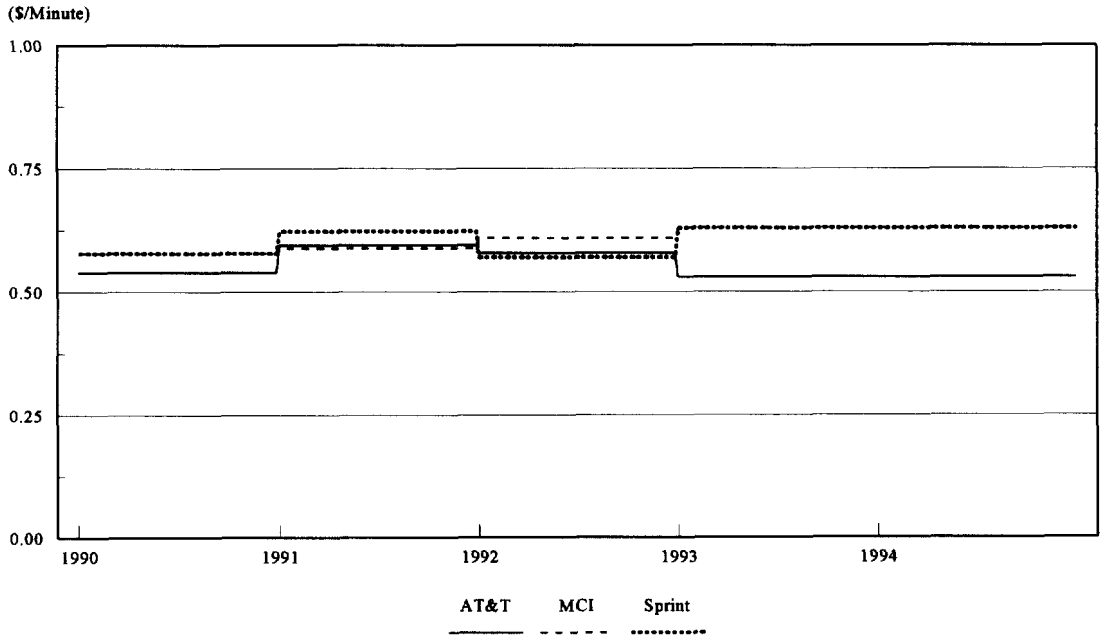

FIGURE NINE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO CANADA
(BASED ON GROSS SETTLEMENT PAYMENTS)

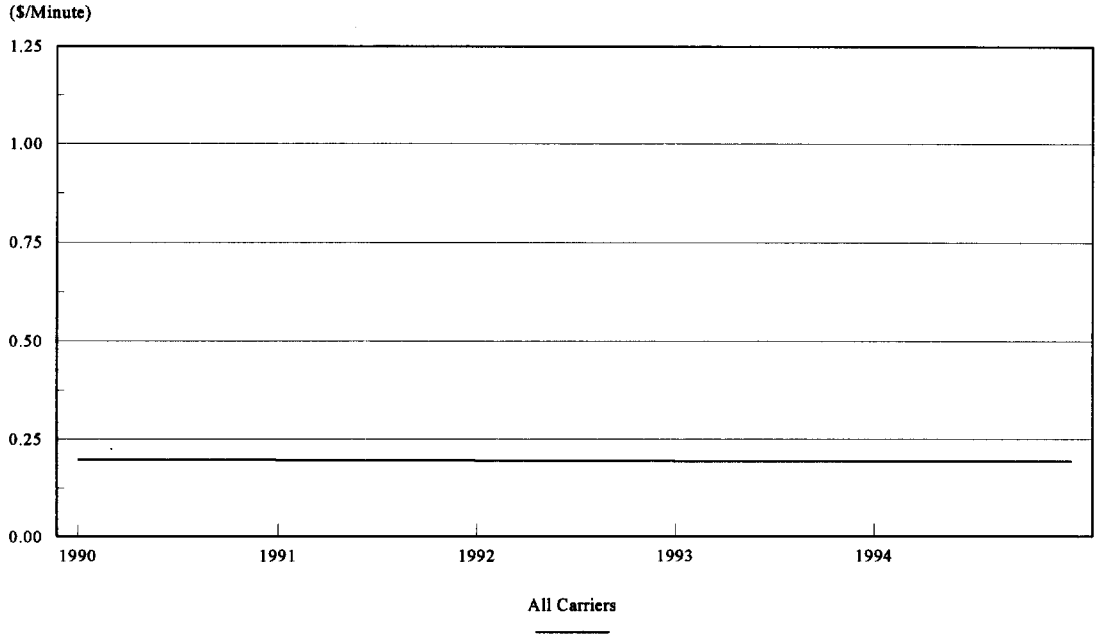

FIGURE TEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO MEXICO
(BASED ON GROSS SETTLEMENT PAYMENTS)

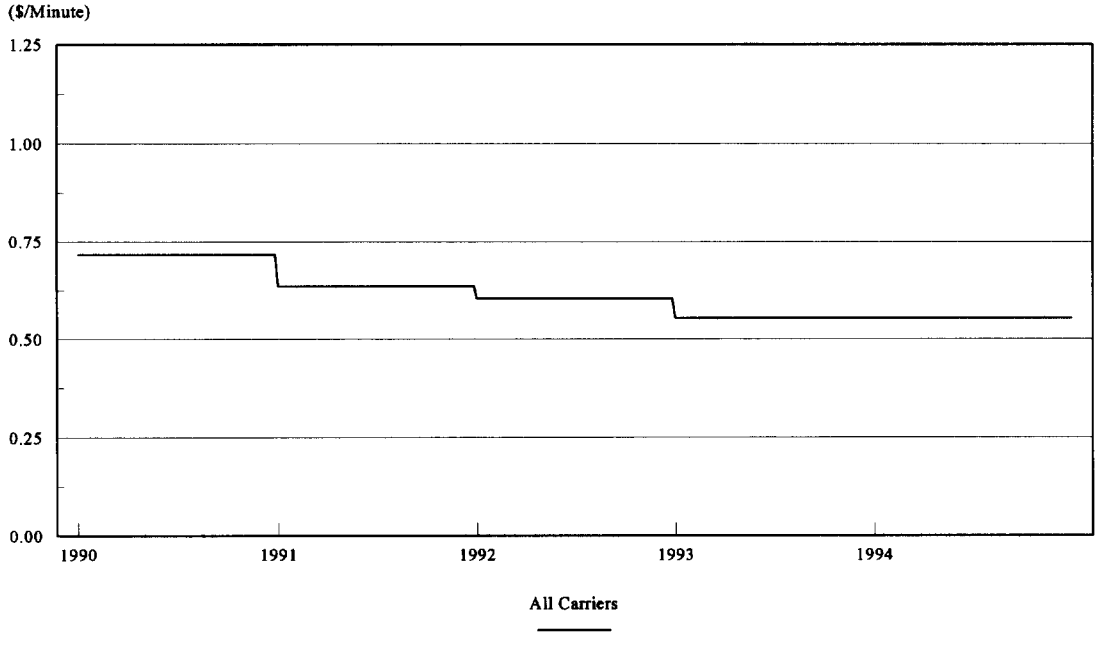

FIGURE ELEVEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO UNITED KINGDOM
(BASED ON GROSS SETTLEMENT PAYMENTS)

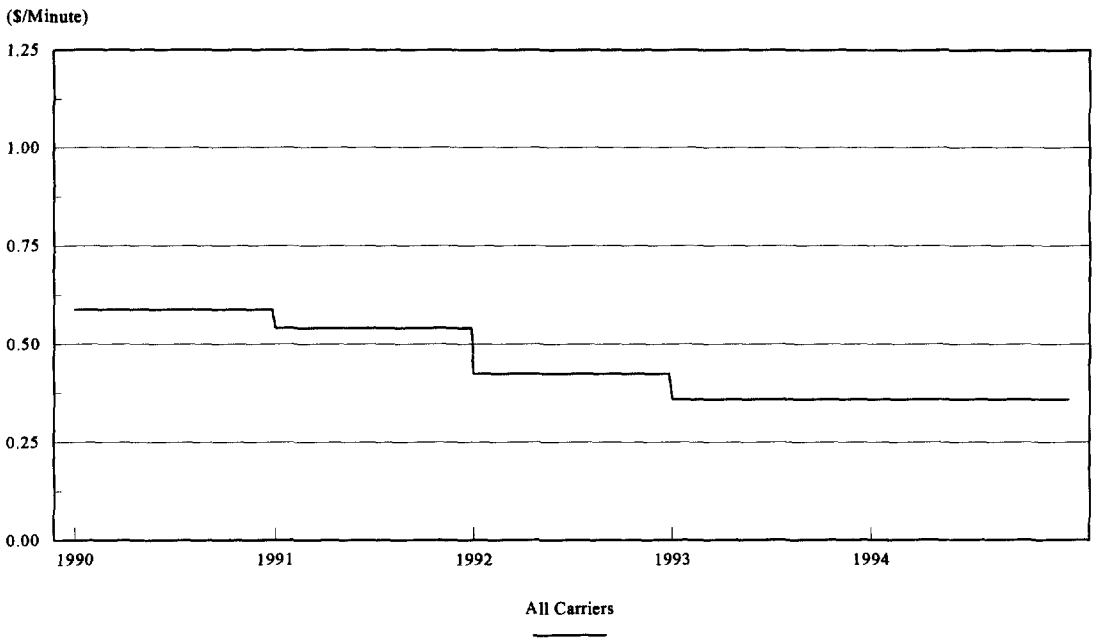

FIGURE TWELVE
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO GERMANY
(BASED ON GROSS SETTLEMENT PAYMENTS)

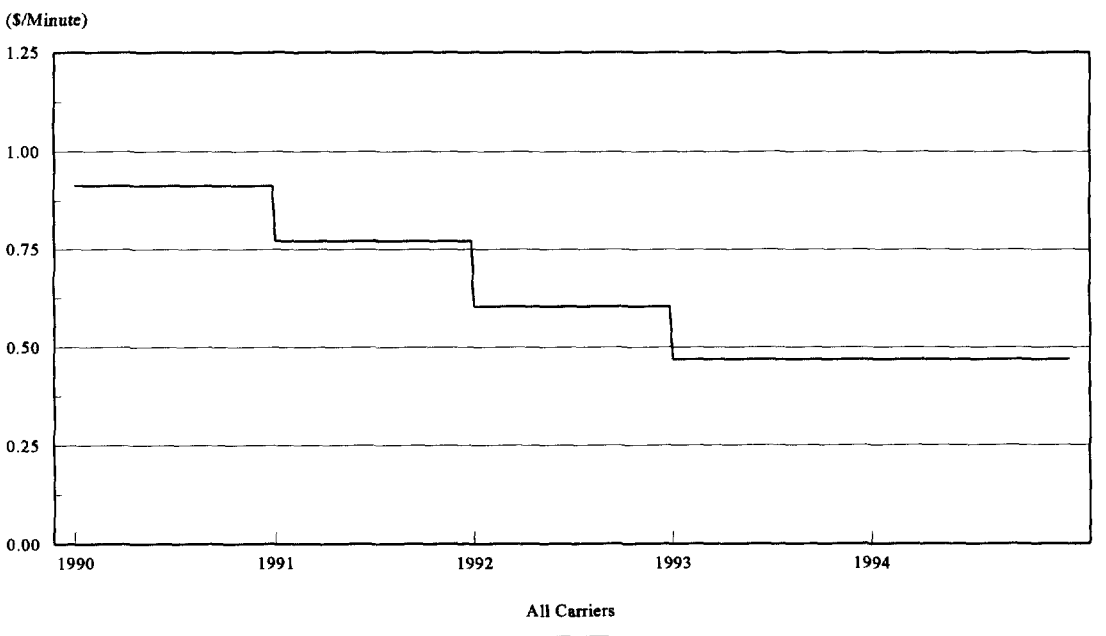

FIGURE THIRTEEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO FRANCE
(BASED ON GROSS SETTLEMENT PAYMENTS)

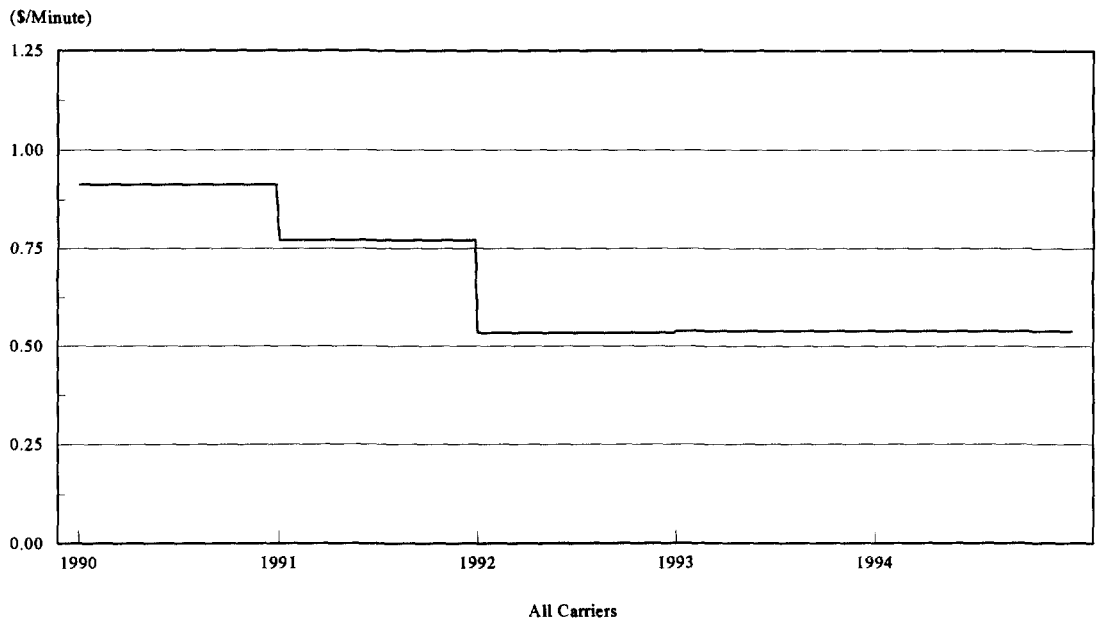

FIGURE FOURTEEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO ITALY
(BASED ON GROSS SETTLEMENT PAYMENTS)

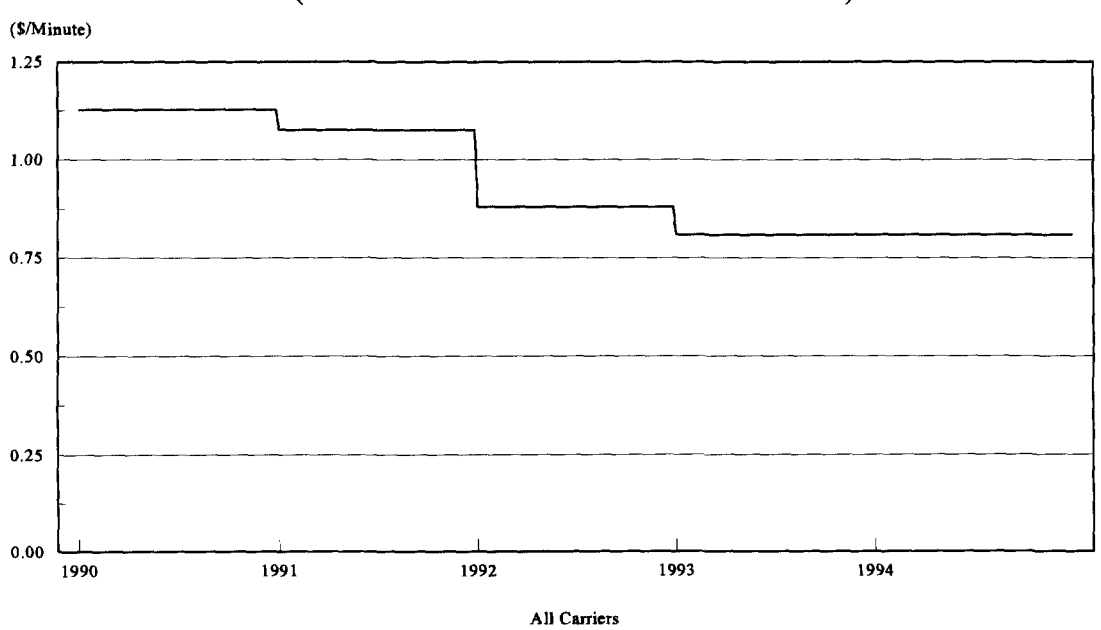

FIGURE FIFTEEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO JAPAN
(BASED ON GROSS SETTLEMENT PAYMENTS)

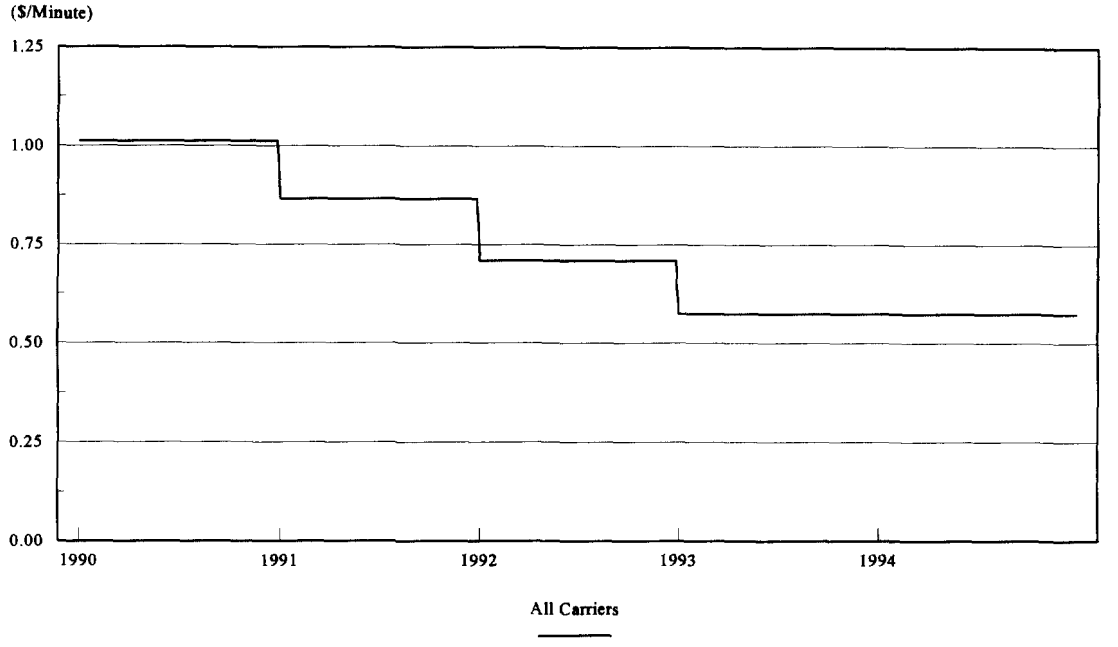

FIGURE SIXTEEN
MARGINAL COST OF INTERNATIONAL TELECOMMUNICATIONS
SERVICE FROM U.S. TO DOMINICAN REPUBLIC
(BASED ON GROSS SETTLEMENT PAYMENTS)